UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,095	06/18/2002	Peter L Collins	NIH-0379	6003

7590 03/11/2004

Jeffrey J King
Woodcock Washburn
One Liberty Place - 46th Floor
Philadelphia, PA 19103

EXAMINER	
CHEN, STACY BROWN	
ART UNIT	**PAPER NUMBER**
1648	

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/031,095	COLLINS ET AL.	
	Examiner	Art Unit	
	Stacy B Chen	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-88* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-88* is/are rejected.

7)☒ Claim(s) *32-36,68-75* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's response to the Restriction Requirement, dated December 4, 2003, is acknowledged. Applicant notes that claims 63-88 were not included in the Restriction Requirement mailed November 4, 2003. Upon further review and consideration, all claims will be examined on the merits.

Claim Objections

2. Claims 68 and 75 are objected to for depending improperly from claims 65 and 74, respectively. In these particular claims, the product claims improperly depend from method claims. Claims 32-36 lack proper punctuation. Correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-54 and 63-88 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. These claims read on embodiments of the claimed chimeric RSV wherein the virus comprises a RNA polymerase elongation protein. Thus, the claims as written encompass a generic class of chimeric RSV viruses, each of which may contain any RNA polymerase

elongation factor. The specification does not provide adequate written description support for the full scope of these generic claims.

The following quotation from section 2163 of the Manual of Patent Examination Procedure is a brief discussion of what is required in a specification to satisfy the 35 U.S.C. 112 written description requirement for a generic claim covering several distinct inventions:

> The written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by actual reduction to practice..., reduction to drawings..., or by disclosure of relevant, identifying characteristics, i.e., structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the claimed genus... See Eli Lilly, 119 F.3d at 1568, 43 USPQ at 1406.
>
> A "representative number of species" means that the species which are adequately described are representative of the entire genus. Thus, when there is substantial variation within the genus, one must describe a sufficient variety of species to reflect the variation within the genus.

Thus, when a claim covers a genus of inventions the specification must provide written description support for the entire scope of the genus. Support for a genus is generally found where the applicant has provided a number of examples sufficient so that one in the art would recognize from the specification the scope of what is being claimed. However, a disclosure will also support the claims in the absence of examples if the description would enable one in the art to practice the invention without such guidance.

In the present case, the applicant has disclosed only a single example of a RNA polymerase elongation factor, the M2ORF1 protein of RSV, see page 22, line 19 of the specification. Although the specification states that MRORF1 is only a preferred embodiment, neither the description nor the examples in the application provide any indication of what equivalents may be. Without example, or some identification of the MRORF1 structure that is necessary to its operation, one in the art wishing to practice the invention has no indication as to

what other proteins may be used in the claimed virus. In view of the lack of description for any RNA polymerase elongation factor other than the M2ORF1, the claims are rejected for exceeding the scope of descriptive support provided by the specification.

4. Claims 1-54 and 63-88 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an isolated infectious recombinant RSV wherein the virus comprises the M2ORF1 RNA polymerase elongation factor, does not reasonably provide enablement for viruses containing any RNA polymerase elongation factor. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims.

A claim is commensurate in scope with the enablement when the applicant has provided sufficient disclosure to enable one skilled in the art to practice the claimed invention without undue experimentation. There must be a reasonable correlation between the scope of enablement and the scope of the claims. Such correlation requires sufficient disclosure, either through illustrative examples or terminology, to teach those of ordinary skill how to make and how to use the invention as broadly as it is claimed. This means that the disclosure must adequately guide the art worker to determine, without undue experimentation, which species among all those encompassed by the claimed genus possess the disclosed utility. No such guidance is provided in the present case.

The art relevant to the claimed invention (Collins *et al.*, *PNAS USA* 92:11563-11567) indicates that the M2ORF1 protein is one of the minimal proteins necessary for an infectious RSV (abstract). Further, Tang *et al* (*J. Virology*, 2001, 75:11328-11335) teaches that synthesis

of negative strand viral RNA requires, among other elements, the M2ORF1 protein (page 11328, column 1, first paragraph). Although the specification states that M2ORF1 is only a preferred embodiment, it does not identify any characteristic or examples which one of ordinary skill in the art could use as guides to identify equivalents. Given the teachings of the specification and the disclosures of Collins and Tang, M2ORF1 protein is necessary for any operative recombinant RSV.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-88 are rejected under 35 U.S.C. 102(b) as being anticipated by Murphy *et al* (WO 98/02530). The claims are drawn to an isolated, infectious, recombinant RSV. The genome or antigenome incorporates a heterologous polynucleotide encoding an immune modulatory molecule. Each virus includes the major nucleocapsid protein (N), nucleocapsid phosphoprotein (P), a large polymerase protein (L), a RNA polymerase elongation factor (only M2ORF1 has been considered for this rejection, see rejection of claims 1-54 and 63-88 under 35 U.S.C. 112, first paragraph), a partial or complete RSV background genome or antigenome of a human or bovine RSV combined with one or more heterologous gene(s) and or genome segment(s) of a different RSV to form a human-bovine chimeric RSV genome or antigenome. Heterologous genes/segments include RSV NS1, NS2, N, P, M, SH, M2ORF1, M2ORF2, L, F,

G, leader, trailer or intergenic region. The heterologous gene can be added or substituted at a position corresponding to a wild-type gene order position, or a position that is more promoter-proximal or promoter-distal compared to the wild-type. Heterologous genes that encode for pathogens such as measles, RSV A and B, mumps, HPV, HIV, HSV, cytomegalovirus and influenza can be incorporated into the chimeric genome. The background genomes/antigenomes can be human or bovine. Attenuating mutations can be incorporated into the genomes, such as those found in the viruses recited in claim 30, ATCC deposits. Segments from parainfluenza virus (PIV) can be incorporated into the chimeric RSV genome. Nucleotide modifications of the genome introduce phenotypic changes, modifications of segments, ablations, deletions and rearrangements. The chimeric genome can be modified to encode an immunomodulatory molecule. Also claimed is a method for stimulating an immune response, a method for making the chimeric virus and a polynucleotide encoding the recombinant RSV.

Murphy teaches that infectious RSV for use in humans as immunogenic compositions can be modified to be attenuated by replacing HRSV epitopes or proteins with BRSV counterparts (page 7, lines 10-37). Other alterations can be made such as changing the order of the genes (page 10, lines 9-24). Proteins from PIV such as HN or F can be incorporated into the chimeric RSV (claim 23). Attenuating mutations be introduced, such as those found in attenuated RSV viruses deposited in the ATCC, identical to the ATCC deposits instantly claimed. The chimeric virus can be a subviral particle (page 7, line 16). Phenotypic changes can be introduced which results in changes in viral growth, temperature sensitivity, plaque size and host range restriction. Other changes include nucleotide insertions, rearrangements, deletions or substitutions (page 12, lines 11-21). Levels of RSV gene expression are modified at the level of transcription which can

be changed by moving the selected gene to a more promoter-proximal or promoter-distal position (page 43, lines 28-33). Immunomodulatory molecules can be incorporated such as cytokines and T-helper epitopes (page 11, lines 21-26). The virus can be administered in the amount of 10^3 to 10^6 PFU to the upper respiratory tract by spray, droplet, or aerosol, for example (page 13, lines 18-37). The viruses are generated from cloned nucleotide sequences (abstract and pages 48-49. Therefore, the invention as a whole is anticipated by the prior art.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-54 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-78 of U.S. Patent No. 6,699,476 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the patent are a species of the genus instantly claimed. The claims of the patent are drawn to a recombinant RSV having a M2ORF1 polymerase elongation factor, while the instant

claims are drawn to a recombinant RSV having a polymerase elongation factor. Therefore, the instant genus claims are rendered obvious by the patent's species claim.

7. Claim 21 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2 and 4 of copending Application No. 09/611,829. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the co-pending application and the instant application are drawn to an isolated, infectious recombinant RSV whose genome has been modified to reduce or ablate expression of M2ORF2. The claim of the instant application present the ablation of the M2ORF2 in a Markush group.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

8. Claim 30-40 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 42 of copending Application No. 09/602,212. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claim of the copending application and the instant claims are drawn to a human/bovine chimeric RSV whose genome also encodes an immune modulatory molecule. The claim of the copending application presents the immune modulatory molecule in a Markush group.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

9. Claim 30-40 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 42 of copending Application No. 10/030,951. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claim of the copending application and the instant claims are drawn to a human/bovine chimeric RSV whose genome also encodes an immune modulatory molecule. The claim of the copending application presents the immune modulatory molecule in a Markush group.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

10. No claim is allowed.

Papers relating to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 located in Crystal Mall 1. The Fax number for Art Unit 1648 is (703) 872-9306. All Group 1600 Fax machines will be available to receive transmissions 24 hrs/day, 7 days/wk. Please note that the faxing of such papers must conform with the Notice published in the Official Gazette, 1096 OG 30, (November 15, 1989).

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Stacy B. Chen, whose telephone number is (571) 272-0896. The Examiner can normally be reached on Monday through Friday from 7:30 AM-4:00 PM, (EST). If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor,

James C. Housel, can be reached at (571) 272-0902. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

SBC

Stacy B. Chen
March 2, 2004

James C. Housel 3/8/04

JAMES HOUSEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600